Space Weather Forecast

Issued on Tuesday, 12 April 2022 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Increasing Chance of Minor Geomagnetic Storms on Day 2 and 3 (13 and 14 Apr).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with an eruption from a region without spots near south centre disc giving a Common-class flare at 11/0521 UTC. This eruption produced an Earth directed Coronal Mass Ejection (CME). There is now one sunspot region on the Earth-facing disc on the northeast quadrant. The region near the northwest limb has faded and is no longer visible, but did give another Common-class flare at 11/1830 UTC.

Solar Wind / Geomagnetic Activity: The solar wind was indicative of an ongoing fast wind from a coronal hole. Solar winds have varied between 450-550 km/s, with a slow decline observed. The interplanetary magnetic field (IMF) was mostly weak. The north-south component varied weakly, but has been largely southward directed. Geomagnetic activity has been Quiet to Active (Kp 2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Very Low, with only one small and simple sunspot on the disc. There remains a slight chance of further Common-class flares through the forecast period, bringing the activity up to Low.

Solar Wind / Geomagnetic Activity: There is the possibility of a weak CME arrival early on Day 2 (13 Apr). A second and probably stronger further CME left the sun on 11 April and is forecast to arrive on Day 3 (14 Apr). Current coronal hole fast wind effects are giving slightly elevated solar winds which will probably slowly decline through the period.
Geomagnetic activity is forecast to be Quiet to Unsettled with a Chance of Active intervals on Day 2 (13 April) and a Chance of Minor Storms. The risk of Minor Storms becomes more likely on Day 3 (14 April) with a slight chance of a Moderate Storm as the anticipated second CME from 11 April arrives

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	40	70	10
Strong	G3	No	1	1	10	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	1	1	1	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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